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BAL-0520

5-20 GHz Balun

DEVICE OVERVIEW

General Description

The BAL-0520 is a broadband balun, hand-tuned for optimal phase and amplitude balance over a 5 GHz to 20 GHz bandwidth. It serves as an excellent choice for analog to digital converters, balanced receivers, baseband digital modulations, and signal integrity enhancement.

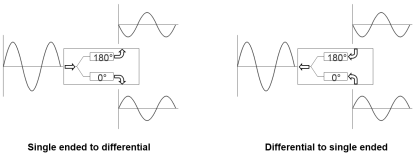
Features

- 2:1 Impedance Ratio
- 5 to 20 GHz Balun (Balanced to Unbalanced Transformer)
- Tuned for Optimal Phase/Amplitude Balance
- Provides 50 Ω to 100 Ω Differential Transformation

Applications

- Antenna Feeds
- Device Testing
- General Lab Use

Functional Block Diagram



Part Ordering Options

Part Number	Description	Connectors	Green Status	Product Lifecycle	Export Classification
BAL-0520	5-20 GHz Balun	Standard	Non-RoHS	Released	EAR99

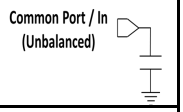
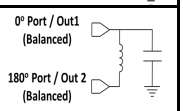
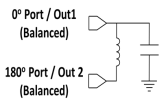
Table Of Contents

Revision History

Revision Code	Revision Date	Comment
-	2013-01-01	Datasheet initial Release
A	2014-01-01	DC Interface Added
B	2019-10-01	Mixed Mode Scattering Parameters added
C	2020-07-01	Specs table update
D	2020-10-01	Specs table update

Port Configuration and Functions

Port Functions

Port	Function	Connector Type	Description	DC Equivalent Circuit
Common Port / In (Unbalanced)	RF Input	SMAF	The common port is DC open.	
Out 1 / 0° Port (Balanced)	0° Port	SMAF	The 0° port is DC shorted to the 180° port and DC open to ground.	
Out 2 / 180° Port (Balanced)	180° Port	SMAF	The 180° port is DC shorted to the 0° port and DC open to ground.	

Specifications

Absolute Maximum Ratings

Parameter	Maximum Rating	Unit
RF Power Handling	5	W

Package Information

Parameter	Details	Rating
Weight	-	38g
Dimensions	-	36.32 x 36.32 mm

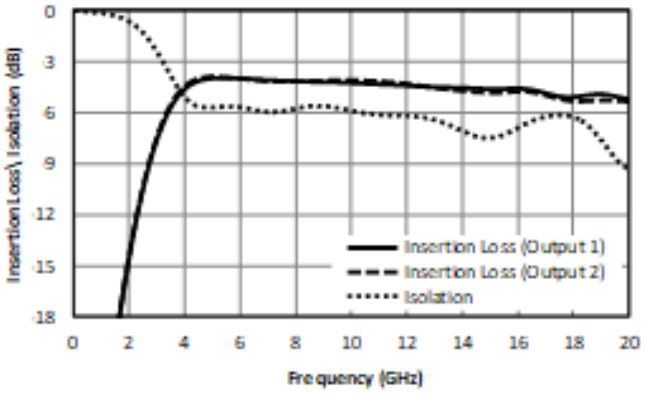
Electrical Specifications

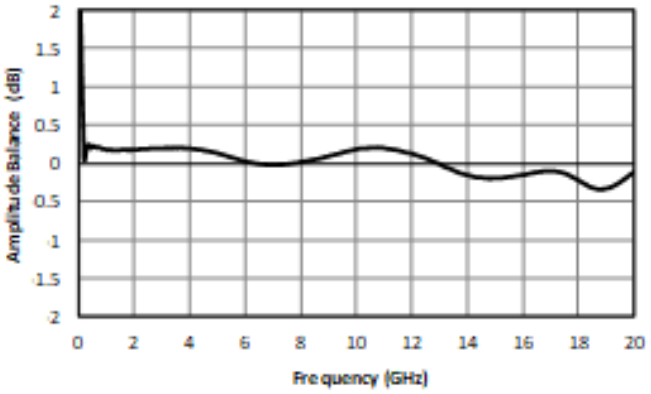
Specifications guaranteed from -55 to +100°C, measured in a 50Ω system.

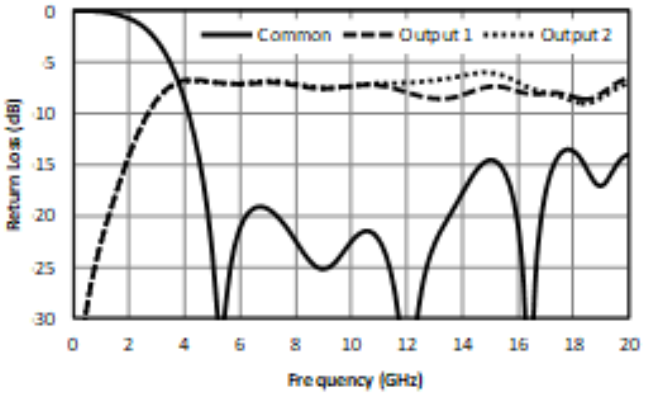
Parameter	Test Conditions	Minimum Frequency (GHz)	Maximum Frequency (GHz)	Min	Typ	Max	Unit
Amplitude Balance	-	5	20	-	0.2	0.6	dB
Common Mode Rejection	-	5	20	22	30	-	dB
Insertion Loss as a Mode Converter	-	5	20	-	1.5	3.5	dB
Isolation	-	5	20	-	6	-	dB
Nominal Phase Shift	-	5	20	-	180	-	°
Phase Balance	-	5	20	-	3	8	°
VSWR (Input)	-	5	20	-	1.4	-	
VSWR (Output)	-	5	20	-	2.6	-	
Impedance Ratio	-	-	-	-	2:1	-	

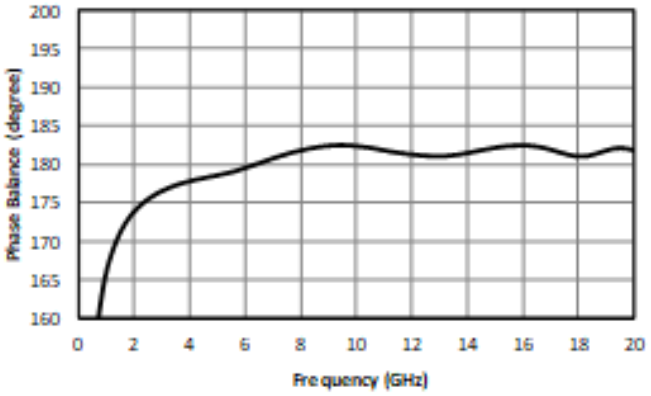
Typical Performance Scattering Parameters

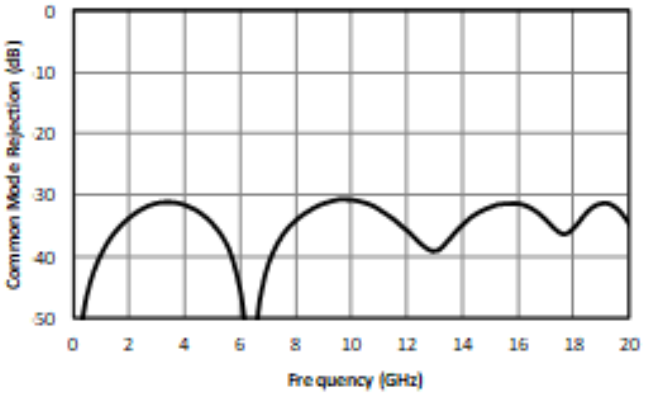
Three port scattering parameters measured as three single-ended 50Ω ports showing relationship between any two ports. For example: S21 and S31, often referred to as insertion loss of a balun, is the output response on ports 2 and 3 with an input stimulus on port 1.

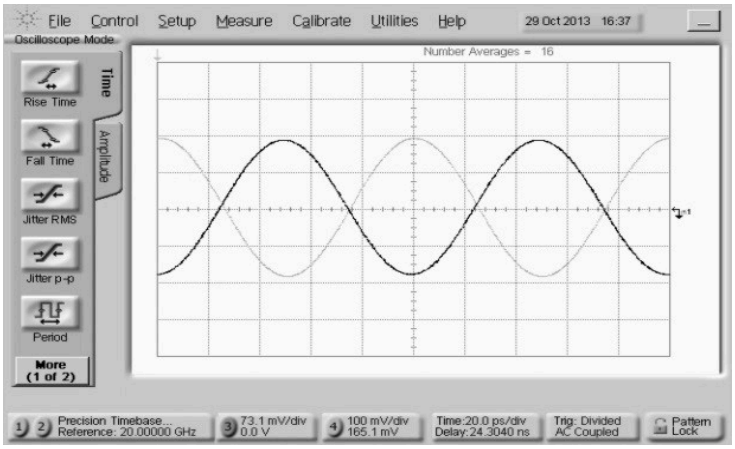






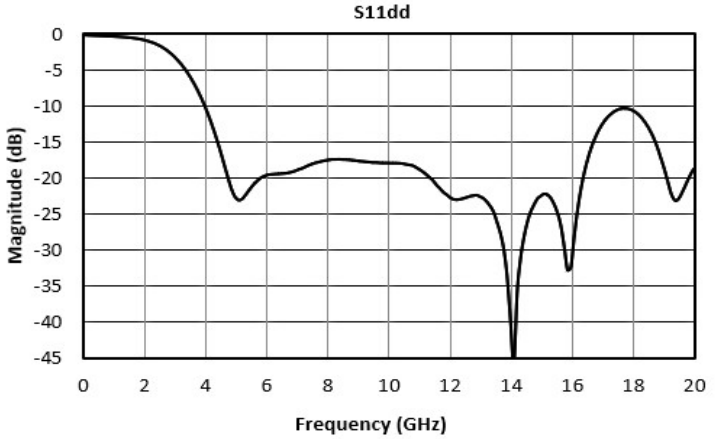


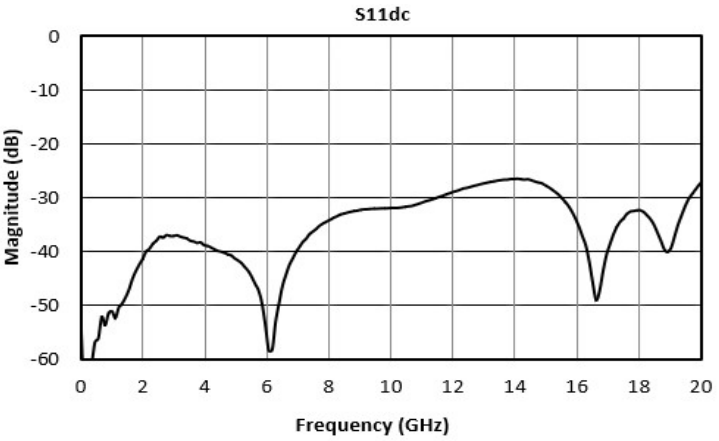


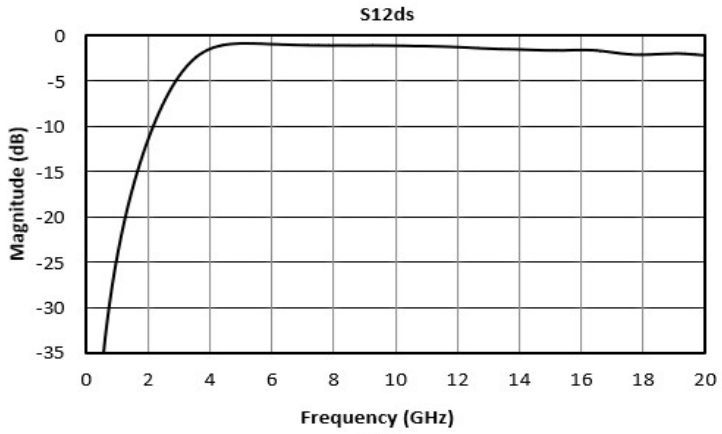


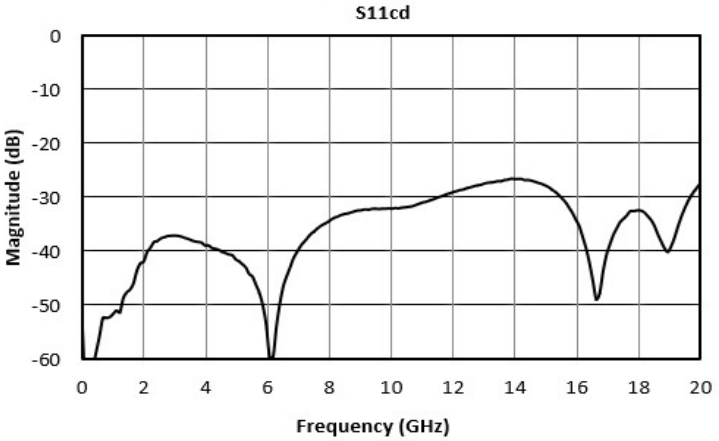
Mixed Mode Scattering Parameters

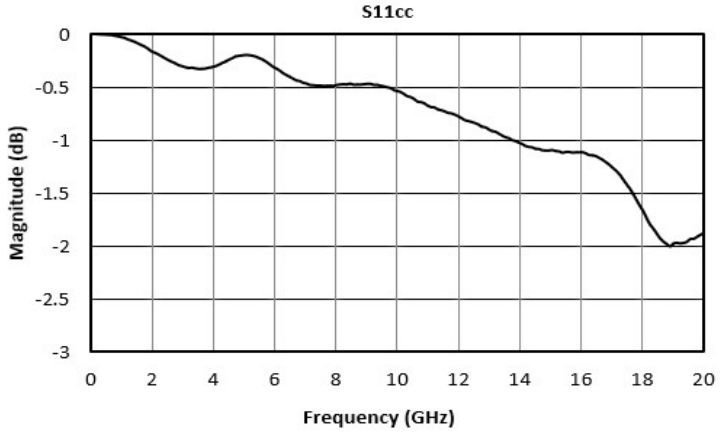
Mixed mode scattering parameters are used to characterize differential circuits. For baluns, this means that the 0° and 180° ports become a single 100Ω differential port and the common port remains the same 50Ω common port. The two-port s-parameters of the balun are then characterized based on differential (d), common mode (c), or single-ended (s) signals. For example: S12ds is the differential output response given a single ended input.

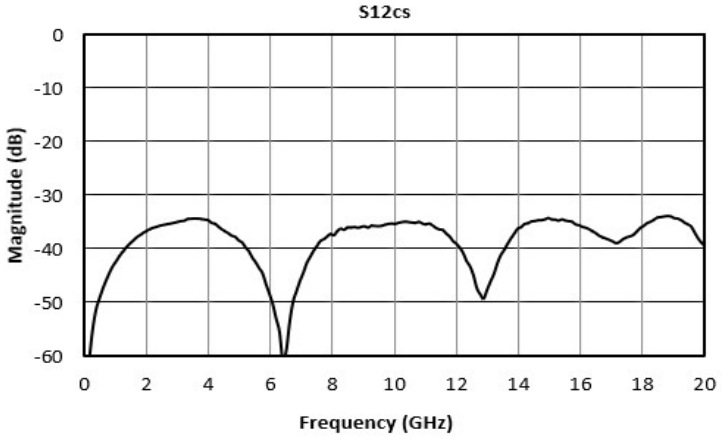


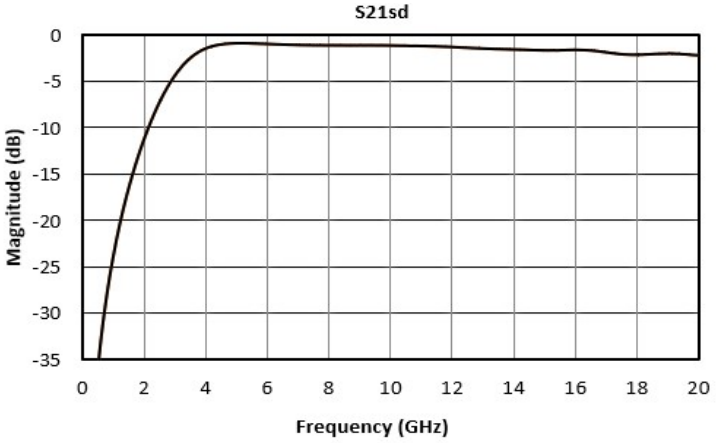


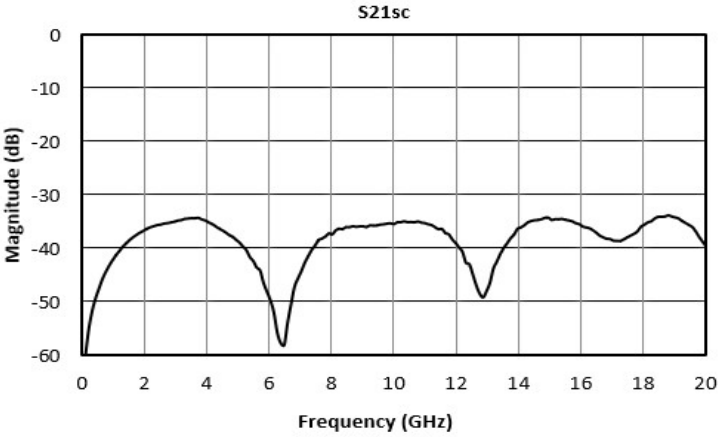


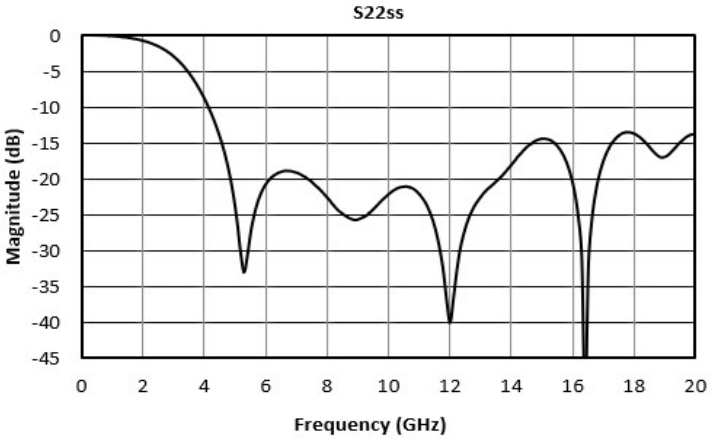








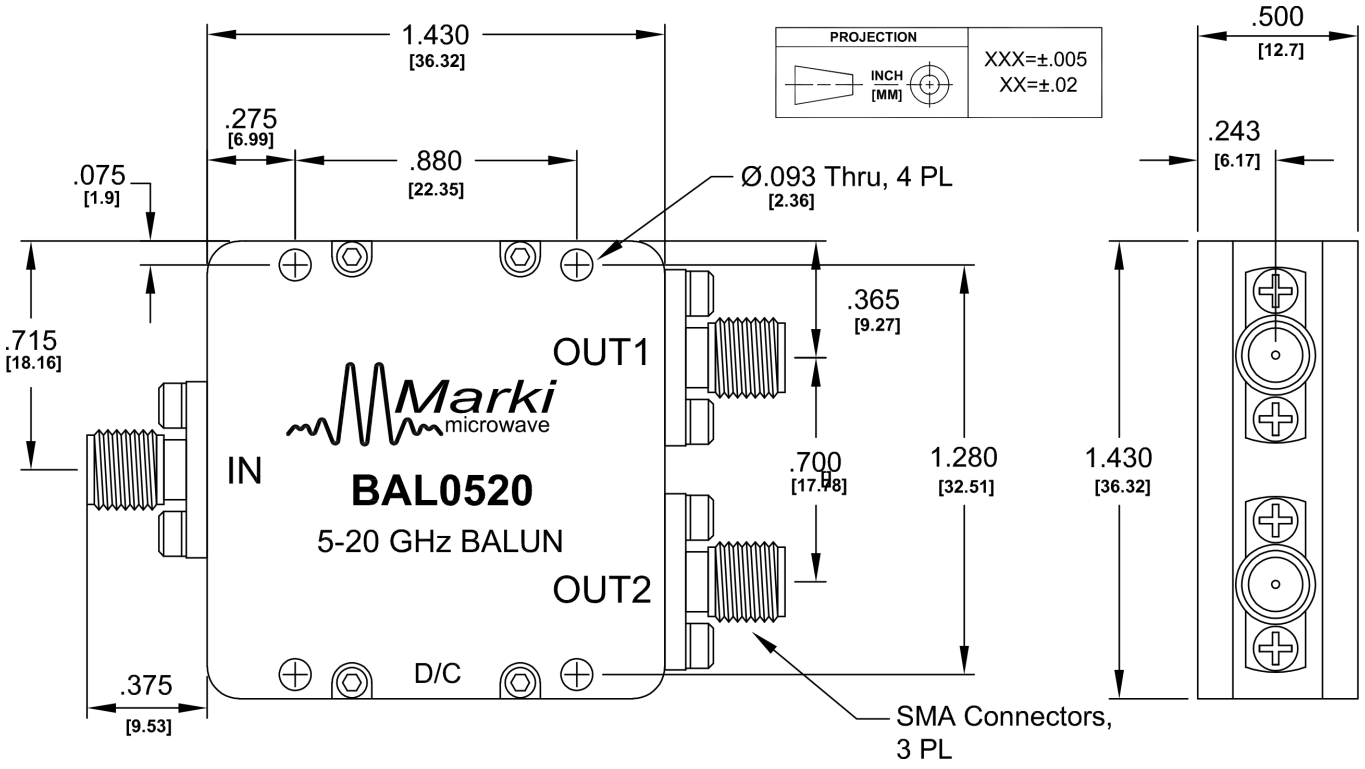




Mechanical Data

Outline Drawing

Download : Outline 2D Drawing | Outline 3D Drawing | Outline 3D STP



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